

**Section II.** (Amendments to the Claims)

Please amend claims 2-4, 12-13, 24, 26, 57-58, and 60, and add new claim 62, as set out below.

1. (canceled)
2. (currently amended) The method according to claim 57, wherein the ~~reactive halide dry etching~~ composition ~~comprises~~ consists essentially of  $\text{XeF}_2$ .
3. (currently amended) The method according to claim 57, wherein the ~~reactive halide dry etching~~ composition ~~is~~ consists essentially of at least one dry etching agent selected from the group consisting of  $\text{SF}_6$ ,  $\text{SiF}_4$ , and  $\text{Si}_2\text{F}_6$ .
4. (currently amended) The method according to claim 57, wherein the ~~reactive halide dry etching~~ composition ~~is~~ consists essentially of at least one dry etching agent selected from the group consisting of  $\text{SiF}_2$  and  $\text{SiF}_3$  radicals.
- 5-11 (canceled)
12. (previously amended) The method according to claim 57, wherein the ~~gas-phase reactive halide dry etching~~ composition ~~is selected from the group consisting~~ consists essentially of  $\text{SiF}_2$  and  $\text{SiF}_3$  radicals and the ~~reactive halide dry etching~~ composition is generated by reaction of  $\text{XeF}_2$  with silicon.
13. (previously amended) The method according to claim 57, wherein the ~~gas-phase reactive halide dry etching~~ composition ~~is selected from the group consisting~~ consists essentially of  $\text{SiF}_2$  and  $\text{SiF}_3$  radicals and the ~~reactive halide dry etching~~ composition is generated by passing  $\text{SiF}_4$  through an energetic dissociation source.
14. (currently amended) The method according to claim 13, wherein the energetic dissociation source is selected from the group consisting of a plasma source, and ion source, and ultra violet source and a laser source.

15-23 (canceled)

24. (currently amended) ~~The method according to claim 57~~ A method for removing from a microelectronic device structure a noble metal residue, the method comprising contacting the microelectronic device structure with a dry etching agent consisting essentially of (i) a gas-phase reactive halide composition and (ii) optionally, an agent for enhancing volatility of metal fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition (i), to remove the residue, wherein the noble metal residue comprises iridium, and the gas-phase reactive halide composition comprises XeF<sub>2</sub> and at least one halide species selected from the group consisting of SF<sub>6</sub>, SiF<sub>4</sub>, Si<sub>2</sub>F<sub>6</sub>, SiF<sub>2</sub> radicals and SiF<sub>3</sub> radicals, and wherein the microelectronic device structure is further contacted with a cleaning enhancement agent.

25. (previously amended) The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of Lewis-base and electron back-bonding species.

26. (currently amended) The method according to claim 24, wherein the cleaning enhancement agent is selected from the group consisting of carbon monoxide, ~~trifluorophosphine~~ trifluorophosphine, and trialkylphosphines.

27. (previously amended) The method according to claim 24 wherein the cleaning enhancement agent comprises an agent for enhancing volatility of iridium fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition.

28-52 (cancelled)

53. (previously added) A method for removing a noble metal residue comprising iridium, from a microelectronic device structure disposed in a chamber, the method comprising evacuating the chamber, filing the chamber with a cleaning gas comprising XeF<sub>2</sub> and one or more radicals selected from the group consisting of SiF<sub>2</sub> and SiF<sub>3</sub>, and retaining the cleaning gas in the chamber to react with the residue, to effect the removal of the noble metal residue from the microelectronic device structure.

54-56 (cancelled)

57. (currently amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a dry etching ~~agent~~ composition consisting essentially of (i) ~~a gas-phase reactive halide composition~~ at least one dry etching agent selected from the group consisting of  $\text{XeF}_2$ ,  $\text{SiF}_4$ ,  $\text{Si}_2\text{F}_6$ ,  $\text{SiF}_2$  radicals, and  $\text{SiF}_3$  radicals, and (ii) optionally, carbon monoxide ~~an agent for enhancing volatility of metal fluoride species formed by said contacting of the microelectronic device structure with the gas-phase reactive halide composition (i), to remove the residue, with the proviso that when the dry etching agent is  $\text{XeF}_2$  or a sulfur fluoride species, said noble metal residue includes at least one metal selected from the group consisting of palladium, iridium and rhodium.~~
58. (previously added) A method for removing from a microelectronic device structure, a noble metal residue comprising iridium said method comprising, contacting the microelectronic device structure with a gas-phase reactive halide composition comprising  $\text{XeF}_2$  and at least one cleaning enhancement agent selected from the group consisting of carbon monoxide, ~~trifluorophosphine~~ trifluorophosphine, and trialkylphosphines, to form at least one iridium halide species.
59. (previously added) The method according to claim 57, wherein said noble metal residue includes at least one metal selected from the group consisting of palladium, iridium and rhodium.
60. (currently amended) The method according to claim 57, wherein said dry etching ~~agent includes said agent (ii)~~ composition consists essentially of (i) said at least one dry etching agent and (ii) carbon monoxide.
61. (previously added) A method of etching iridium, comprising contacting said iridium with  $\text{XeF}_2$ .
62. (new) A method for removing a noble metal residue from a microelectronic device structure, wherein said noble metal residue is selected from the group consisting of palladium, iridium and rhodium, said method comprising contacting the microelectronic device structure with a composition consisting essentially of: (1)  $\text{SF}_6$  and optionally (2) carbon monoxide.